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10/646,637

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Takao Tsuruoka

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EXAMINER

MISLEH, JUSTIN P

ART UNIT

PAPER NUMBER

2622

MAIL DATE

DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/646,637

Applicant(s)

TSURUOKA, TAKAO

Examiner

Justin P. Misleh

Art Unit

2622

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period **will** apply and **will** expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply **will**, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 September 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 - 32 is/are pending in the application.
- 4a) Of the above claim(s) 4,8-10,14,20-22,26 and 31 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3,5,7,15-17,19,27-30 and 32 is/are rejected.
- 7) ☒ Claim(s) 6,11-13,18 and 23-25 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed September 21, 2009 have been fully considered but they are not persuasive.
2. With respect to independent Claims 1 and 27, Applicant argues, "Mancuso et al. fail to teach or even remotely suggest correcting the estimating result obtained by estimating element 245." See Amendment, page 16.
3. The Examiner respectfully disagrees with Applicant's position. Mancuso's element 250 only corrects the "amount of noise itself" in the image signal and nothing else. Mancuso state, "The digital image is modified on the basis of the estimation performed by the unit 245 so as to reduce dynamically the effects of the noise introduced by the light sensor, dependent on the noise level and on the spatial characteristics of the image." See column 4, lines 38 – 42. The claim language simply states, "a correction unit for correcting the amount of noise itself estimated by the noise estimator;" that is not to say that the "amount of noise itself" cannot be corrected from the signal.
4. Furthermore, The Examiner respectfully notes the portion of the claim language that recites "based on the amount of noise itself corrected by the correction unit" simply means that the signal that the noise is being reduced in is the signal that is emitted from the correction unit. In the case of Mancuso et al., element 255 is clearly subsequent and directly attached to the noise reduction unit 250; thus, there is no question that the noise being reduced is based on the amount of noise corrected by the correction unit. Furthermore, Mancuso et al. indicate that element 255

Art Unit: 2622

“correct[s] alterations ... of one or more color categories without altering the other colors of the image ... improves the quality of representation [in an image].” See Mancuso et al., column 4, lines 54-60; emphasis added by the Examiner. It is clear element 255 is strictly intended to improve the quality of the image without introducing any additional noise in the image, which satisfactorily meets the claimed requirement of “reducing the noise in the signal.”

5. For these reasons, the Examiner will maintain the rejection of Claims 1 and 27.

6. With respect to independent Claim 28, Applicant argues, “Gindele et al. neither disclose nor remotely suggest a parameter calculator at a noise estimator as recited in claim 28 of the present application.” Applicant further states, “Element 130 of Gindele et al. receives a residual digital image and calculates a set of local residual histograms from the pixel data of the residual digital image. The residual digital image is derived from subjecting the original image to filter processing by element 120, which applies a spatial filter to the digital image 201. It can thus be seen that the residual digital image is based on data that is clearly related to a signal configuring the original image and is data that is clearly related to a signal level. In other words, the data provided for element 130 is clearly not information which is not relevant to signal level.” See Amendment, pages 21 and 22.

7. The Examiner respectfully disagrees with Applicant’s position. Gindele’s element 130 makes use of default residual histograms 205, which is information which is not relevant to the signal level. See Gindele, column 4 (lines 37 – 51).

8. For these reasons, the Examiner will maintain the rejection of Claim 28.

Election/Restrictions

9. Newly amended **Claim 4** and newly submitted **Claim 31** are directed to an invention that is independent or distinct from the invention originally elected. **Claim 4** recites, *inter alia*, "the shooting condition estimator comprises ... a regional estimating unit." The elected embodiment includes figure 3, which shows a shooting condition estimator with an overall estimating unit. The non-elected embodiment includes figures 11A and 11B, which shows a shooting condition estimator with a region estimating unit. **Claim 31** depends from **Claim 4**. Accordingly, **Claims 4 and 31** are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

11. **Claims 1 – 3, 5, 15 – 17 and 27** are rejected under 35 U.S.C. 102(b) as being anticipated by Mancuso et al. (US 6,256,414 B1).

12. Applicant admits, "Method claim 27 has been amended to recite substantially the same limitations incorporated in apparatus claim 1 and it is submitted that claim 27 patentably distinguishes over Mancuso et al. for the same reasons set forth above regarding claim 1." See

Art Unit: 2622

amendment, page 19. For this reason, Claims 1 and 27 will be rejected together using the language of Claim 1.

13. For **Claims 1 and 27**, Mancuso et al. disclose, as shown in figures 1 and 2, an image pickup system comprising:

a noise estimator (245) for estimating an amount of noise related to random noise (Applicant's random noise is based at least one of temperature, gain and length of exposure; Mancuso's noise is based on luminosity which is based on length of exposure) contained in a digitized signal from an image pickup element (120) composed of an array of a plurality of pixels, either for each pixel or for each specified unit area comprising a plurality of pixels (see column 2, lines 26 – 58; and column 4, lines 32 – 53);

a shooting condition estimator (230) for estimating a shooting condition when an image based on said signal is acquired, based on at least one of control information related to a shooting unit and information related to said signal (Applicant's control information related to a shooting unit and information related to said signal corresponds to elements 31 – 33 in figure 6; Mancuso's MUX 210 feeds element 230 the image signal which produces a histogram of the frequency distribution of the image; see column 4, lines 11 – 31);

a correction unit (250) for correcting the amount of noise itself estimated by the noise estimator (245) based on the shooting condition estimated by the shooting condition estimator (Mancuso's element 250 only corrects the "amount of noise itself" in the image signal and nothing else. Mancuso state, "The digital image is modified on the basis of the estimation performed by the unit 245 so as to reduce dynamically the effects of the noise introduced by the light sensor, dependent on the noise level and on the spatial characteristics of the image." See

column 4, lines 38 – 42. The claim language simply states “a correction unit for correcting the amount of noise itself estimated by the noise estimator;” that is not to say that the “amount of noise itself” cannot be corrected from the signal.); and

noise reducing unit (255) for reducing the noise related to random noise in the signal based on the amount of noise itself corrected by the correction unit (see column 4, lines 54 – 58).

The Examiner respectfully notes the portion of the claim language that recites “based on the amount of noise itself corrected by the correction unit” simply means that the signal that the noise is being reduced in is the signal that is emitted from the correction unit. In the case of Mancuso et al., element 255 is clearly subsequent and directly attached to the noise reduction unit 250; thus, there is no question that the noise being reduced is based on the amount of noise corrected by the correction unit. Furthermore, Mancuso et al. indicate that element 255 “correct[s] alterations ... of one or more color categories without altering the other colors of the image ... improves the quality of representation [in an image].” See Mancuso et al., column 4, lines 54-60; emphasis added by the Examiner. It is clear element 255 is strictly intended to improve the quality of the image without introducing any additional noise in the image, which satisfactorily meets the claimed requirement of “reducing the noise in the signal.”

14. As for **Claim 2**, Mancuso et al. disclose, as shown in figures 1 and 2, color filters arranged on a front surface of the image pickup element (120; see column 2, lines 26 – 58); and a separating unit (205) for separating the signal that is output from the image pickup element into signals for each color filter (see column 3, lines 42 – 50).

15. As for **Claims 3 and 15**, Mancuso et al. disclose, as shown in figures 1 and 2, wherein the noise estimator (245) comprises:

parameter calculator (245) for calculating parameters based on at least one type of information selected from among a signal value level of the signal (“estimate of the noise dependent on the luminosity of the digital image”; see column 4, lines 33 – 34), *a temperature of the image pickup element, a gain for the signal, and a shutter speed during shooting* (not required due to the alternative nature of the claim language); and

a noise amount calculator (245) for calculating the amount of noise based on the parameters calculated by the parameter calculating means calculator (“estimate of the noise dependent on the luminosity of the digital image”; “The digital image is modified on the basis of the estimation performed by the unit 245 so as to reduce dynamically the effects of the noise introduced by the light sensor, dependent on the noise level and on the spatial characteristics of the image”; see column 4, lines 33 – 44).

16. As for **Claims 5, 16, and 17**, Mancuso et al. disclose, as shown in figures 1 and 2, wherein the shooting condition estimator (230) comprises an overall estimator (230) for estimating the shooting condition for an overall signal when an image based on the signal is acquired (see column 4, lines 12 – 21), based on exposure information.

According to Mancuso et al., “a signal output by the multiplexer 210 is also applied to a calculation unit 230 which produces a histogram of the frequency distribution of the image.” (See Mancuso et al., column 4, lines 13 - 15). The histogram in Mancuso et al. is simply an evaluation of the image captured. The image captured is a representation of a scene based on capturing the conditions of the image pickup system at the time of capture, which includes exposure information. Thus, the calculation 230 by itself functions, in effect, as the claimed shooting condition estimator which estimates based on exposure information.

17. **Claims 28, 29 and 32** are rejected under 35 U.S.C. 102(e) as being anticipated by Gindele et al. (US 7,054,501 B1).

18. For **Claim 28**, Gindele et al. disclose, as shown in figures 2 and 3, an image pickup system, comprising:

a parameter calculator (130) for calculating a signal level of a digitized signal from an image pickup element composed of an array of a plurality of pixels (201), and information provided and which is not relevant to said signal level (“default residual histograms 205”), as parameters for use to estimate an amount of noise (see column 4, lines 37 – 51; and column 5, line 47 – column 6, line 54);

a noise estimator (140) for calculating a coefficient (“RC”) of a function equation (standard deviation) for estimating an amount of noise with respect to said signal level as a function that uses (see table 2), as a variable, a parameter related to the provided, non-relevant, information (see column 11, lines 40 – 66), and estimating an amount of noise contained in said signal, either for each pixel or for each specified unit area comprising a plurality of pixels, using the function equation specified by the calculated coefficient (see column 7, line 24 – column 8, line 48); and

a noise reducing unit (22/23) for reducing noise in said signal based on the amount of noise estimated by the noise estimator (see figure 2).

19. As for **Claim 29**, Gindele et al. disclose, as shown in figures 2 and 3, a shooting condition estimator (130) for estimating a shooting condition when an image based on said signal is acquired (see column 5, lines 47 – 67; The histogram is simply an evaluation of the image

Art Unit: 2622

captured. The image captured is a representation of a scene based on capturing the conditions of the image pickup system at the time of capture.); and

a correction unit (22/23) for correcting the amount of noise estimated by the noise estimator (110) based on the shooting condition estimated by the shooting condition estimator, wherein the noise reducing unit reduces noise in said signal based on the amount of noise corrected by the correction unit (see column 4, line 28 – 37).

20. As for **Claim 32**, Gindele et al. disclose, as stated in column 4 (lines 37 – 51) and column 5 (line 47) – column 6 (line 54), wherein the non- relevant information comprises coefficients used by the noise estimator and which do not vary as of function of signal level (The “default residual histograms 205” do not vary as of function of signal level).

Claim Rejections - 35 USC § 103

21. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

22. **Claims 7 and 19** are rejected under 35 U.S.C. 103(a) as being unpatentable over Mancuso et al. (US 6,256,414 B1) in view of Official Notice (MPEP § 2144.03).

23. As for **Claims 7 and 19**, Mancuso et al. disclose, as shown in figures 1 and 2, wherein the shooting condition estimator (230) comprises an overall estimating means (230) estimator for estimating and judging, based on exposure information, whether or not the shooting condition

relating to an overall signal when an image based on the signal is acquired is of *back-lighting or excessive front lighting* (see column 4, lines 13 – 21).

According to Mancuso et al., “a signal output by the multiplexer 210 is also applied to a calculation unit 230 which produces a histogram of the frequency distribution of the image.” (See Mancuso et al., column 4, lines 13 - 15). The histogram in Mancuso et al. is simply an evaluation of the image captured. The image captured is a representation of a scene based on capturing the conditions of the image pickup system at the time of capture, which includes exposure information. Thus, the calculation 230 by itself functions, in effect, as the claimed shooting condition estimator which estimates based on exposure information.

However, Mancuso et al. do not disclose whether or not the shooting condition is of night view shooting.

However, the Examiner respectfully takes **Official Notice** (MPEP § 2144.03) that both the concepts and advantages of determining whether the shooting condition is of night view shooting are well known and expected in the art. At the time the invention was made, it would have been obvious to one with ordinary skill in the art to have also included whether the shooting condition is of night view shooting in Mancuso et al. for the advantage of *even further enhancing image quality*.

24. **Claim 30** is rejected under 35 U.S.C. 103(a) as being unpatentable over Gindele et al. (US 7,054,501 B1) in view of **Official Notice** (MPEP § 2144.03).

25. As for **Claim 30**, Gindele et al. disclose that the information provided independently of said signal level can be a unique source identification tag providing information regarding the

Art Unit: 2622

digital image capture device (see column 12, 12 – 24); however, Gindele et al. do not disclose where the information is information of at least one of a temperature of the image pickup element, a gain for the signal, and a shutter speed during shooting.

However, the Examiner respectfully takes **Official Notice** (MPEP § 2144.03) that both the concepts and advantages of providing information that is information of at least one of a temperature of the image pickup element, a gain for the signal, and a shutter speed is well known and expected in the art. At the time the invention was made, it would have been obvious to one with ordinary skill in the art to have also included such information in Gindele et al. for the advantage of *even further enhancing image quality*.

Allowable Subject Matter

26. **Claims 6, 11 – 13, 18, and 23 – 25** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

27. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Justin P. Misleh whose telephone number is (571) 272-7313. The examiner can normally be reached on Monday - Friday 9 AM - 3 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David L. Ometz can be reached on (571) 272-7593. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

**/Justin P Misleh/
Primary Examiner, Art Unit 2622**